



GOLD COAST COLONY

Report

on the

Medical Department

for the year

1945

GOLD COAST

Printed and published by the Government Printing Department, Accra. To be purchased from the Government Printing Department (Publications Branch), Accra, Gold Coast Colony, and from the Crown Agents for the Colonies, 4 Millbank, London, S.W.1.

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Annual Medical Report for the Year 1945

I—PUBLIC HEALTH

(I) GENERAL

Essential medical services have been maintained at a reasonable standard throughout the year. No hospitals or dispensaries had to be closed. In several instances, however, a Medical Officer had to assume control of two hospitals and their respective districts. Staff has been very short, and, at times, critically so. Four Medical Officers still remain in Military Service ; and the Department has had the assistance of three Temporary Medical Officers, one part-time.

2. Essential equipment and drugs were obtained in reasonable quantities throughout the year. But prices were high and uncertain ; and often considerable delay ensued before articles ordered came to hand. Supplies were ordered direct through the Crown Agents and not through the Bulk Depot as during the war years. It may safely be asserted that the activities of the Department have not seriously been interfered with in spite of unavoidable delays and uncertainties.

3. Dr. F. J. C. Johnstone, Director of Medical Services, retired owing to ill-health. Dr. J. G. S. Turner, Senior Health Officer, Sierra Leone, was promoted Deputy Director of Medical Service. Dr. D. Lennox, Senior Health Officer, was promoted Assistant Director, Medical Service. Dr. F. MacLagan, Alienist Officer, was promoted Assistant Director, Medical Service, Sierra Leone. Dr. C. Bowesman, Medical Officer, was promoted Surgical Specialist. Dr. A. H. Hall, Medical Officer, was transferred to the Gold Coast from Grenada. Mr. R. G. W. Willcocks was appointed Government Chemist ; and Mr. F. W. Sadler, Chief Accountant and Executive Officer. Major W. H. Donald, Dental Surgeon, retired on pension ; and Dr. E. G. A. Don, Senior Medical Officer, was invalided.

4. Miss H. J. Reid was promoted Senior Nursing Sister ; and Miss H. A. Cain was promoted Senior Nursing Sister, Nigeria. Three Nursing Sisters resigned, and one was invalided. One Nursing Sister was transferred to Malaya ; and two Nursing Sisters seconded from the Malayan Service ceased to be so seconded.

5. Miss I. M. Hutton was appointed Sister Tutor, Nurses' Training School. Miss A. G. Hyslop was appointed Science Mistress, and Miss W. E. Roberts and Mrs. P. R. Pooley, English Mistresses, Nurses' Training School.

6. The great assistance rendered by Temporary Nursing Sisters to the Department must again be gratefully acknowledged. Members of the African Nursing Staff, also, acting in the capacity of Temporary Staff Nurses, continued to do valuable work in tiding over periods of acute shortage of European Nursing Staff.

7. Four Medical Scholars and one Dental Scholar proceeded to the United Kingdom in 1945. One Scholar qualified in medicine and returned to the Gold Coast. After a period of trial, in the capacity of a Clinical Assistant, he was appointed Medical Officer. One Scholar unfortunately died in the United Kingdom ; and one Scholar had his scholarship terminated. At present there are thirteen Medical and four Dental Scholars in the United Kingdom. Of this number one Medical and one Dental Scholars have qualified, and are self-supporting in the United Kingdom.

8. There were many widespread outbreaks of small-pox during the year, but only in the Krachi district did anything approaching an epidemic develop. During the Krachi outbreak, which first came to notice in July and lasted throughout the year, 153 cases with 24 deaths were recorded. Other small outbreaks occurred in Ashanti, in the Colony and in the British Mandated Area of Togoland. As in recent years, the case mortality was low. For the whole of the Gold Coast 128 deaths occurred out of a total of 702 cases recorded. Vigorous prophylactic and preventive measures were taken ; and a total of 447,119 vaccinations and revaccinations were performed.

9. The outbreak of cerebro-spinal meningitis in the Wa-Lawra area, in the north-western section of the Northern Territories, reported last year continued into the current year and rapidly assumed major epidemic proportions. In March, 1945, it showed a distinct decline. By May, 1945, it had died out. Owing to the excellent co-operation between all Departments, and the generous assistance rendered by the Military Authorities, it was possible to confine the epidemic to the Wa, Bole, Lawra-Tumu areas. Otherwise the whole of the Northern Territories and Ashanti might well have been involved. In all there were 9,863 cases recorded in the north-western section of the Northern Territories with 1,056 deaths, of which 285 died without treatment. The low mortality-rate is worthy of mention, and it has now been conclusively proved that early treatment with the sulphonamide drugs robs this disease of much of its former gravity. This fact was fully appreciated by both the Chiefs and people before the epidemic finished. To ensure immediate treatment, small stocks of the sulphonamide drugs were entrusted to the care of the Chiefs who were, also, provided with instructions as to their use. This procedure permitted the commencement of treatment at the onset and before a Medical Officer could arrive on the scene. This early treatment undoubtedly saved numbers of lives. Since the cessation of the epidemic, scattered sporadic cases have occurred both in the Northern Territories and in Ashanti. These tended to increase in number towards the end of the year, but remained scattered and sporadic. Up to the end of the year there was no sign of any epidemic recrudescence. During 1945, a grand total of 10,368 cases with 1,199 deaths was returned for the whole of the Gold Coast. The incidence of the disease on the French side of the frontiers was very comparable to that on the Gold Coast side during the last quarter of the year. More particulars concerning the major epidemic will be given later in the report.

10. Five confirmed cases of yellow fever occurred during the year. Four unfortunately proved fatal. Of these five cases one was a European case and four were African cases. The fatal male European case occurred at Nsuta in the Western Province of the Colony. Two fatal male African cases occurred at Winneba in the

Central Province. And one fatal female African, and one non-fatal female African case occurred at Nsawam and Mangoase, respectively, in the Eastern Province of the Colony. There were no other outbreaks of infectious disease worthy of mention. It was not necessary to declare any of the Gold Coast ports "infected" at any time during the year.

11. The publishing of Drs. A. J. Murray and J. A. Crockett's report on silicosis and tuberculosis in the mining areas, and general observations and recommendations covering the Gold Coast as a whole, has been unavoidably delayed owing to Dr. Crockett's retirement from the Service, and the necessity for forwarding proofs to the United Kingdom for his correction. The publishing of this report should not be much longer delayed. Advance copies of the report have, however, been made available for the Chamber of Mines and other interested bodies and Departments. It is intended to arrange a conference between representatives of the Mining Interest and Government at an early date to discuss ways and means of combining efforts to control the incidence of silicosis and tuberculosis in the mining areas of the Gold Coast.

12. Steady progress has been made in the Anti-Yaws Survey and Mass Treatment Campaign in the Yendi area of the Northern Territories. A total of 20,638 new cases were treated during the year. In addition 922 relapse cases were retreated. This yields a relapse rate of 10·9 per cent for all cases in six to nine months. Among the new cases treated there was a preponderance of female cases in the proportion 1·8 : 1·0. The Medical Officer-in-charge reports that "the attitude of the people is one of increasing confidence and appreciation." Bisglucol has been chosen to replace Sobita, and has proved a much more convenient drug. The cost of Bisglucol is 1d. to 1½d. per adult injection; and is, therefore, considerably more expensive than Sobita. Continued co-operation with the Anti-trypanosomiasis Campaign has continued to guard against the risk of inadvertently producing arsenicfast trypanosomiasis. A considerable number of French subjects have been treated by teams working on the frontier. These figures have not been included in the totals recorded above. The Medical Officer-in-charge reports that from the four sub-divisions which have now been treated twice the following figures show the reduction in transmission: Infectious cases on first visit—3,472; on second visit—1,156, i.e. a percentage reduction of 66·7.

13. The Gold Coast received visits from two distinguished visitors, interested in anti-trypanosomiasis measures in 1945—Professor T. A. Davey and Mr. C. H. N. Jackson, Tanganyika. And a visit from Dr. T. A. M. Nash, Fact Finding Officer, West Africa, is expected shortly. When Professor Davey's and Dr. Nash's reports have been received and studied, it will be possible to estimate the relative importance between direct treatment of the disease and control of the tsetse-fly, and plan accordingly. Tentative plans have already been prepared for the near future, but it will be necessary to await Professor Davey's and Dr. Nash's reports before a definite, long-term policy can be laid down. The Entomologist has been on leave for a considerable portion of the year under review. As a result the Annual Report for 1945, chiefly deals with problems of epidemiology, mass treatment and survey. Mass treatment was carried out by teams under the Senior Medical Officer, and fly eradication measures by game control and selective clearing under the direction of the Entomologist. A standing Committee has been appointed for the Northern Territories under the chairmanship of the Chief Commissioner to advise on all matters affecting anti-trypanosomiasis measures; the repopulation of cleared, fly-free areas; the farming and stock-raising methods to be adopted in these areas, and the future policy of game control. All interested Departments are represented on this Committee.

14. The cessation of hostilities, the great reduction in the Fighting Service's personnel and the almost complete withdrawal of American Forces, has left the Gold Coast Government faced with the upkeep of the extensive drainage systems initiated by the Resident Minister, and executed and previously controlled by the Inter-Allied Malaria Control Board. These schemes, situated at Takoradi and Accra, necessitate the upkeep of extensive lengths of earth drainage channels. In the Accra area, some 170 miles of earth drainage cuts will require closure, or conversion to sub-soil types. These drainage channels are weathering badly, they frequently tap sub-soil water; and falls of the banks in the lower reaches impede the flow of storm water. Water now exists throughout the year where it did not do so formerly. The cost of maintenance of these schemes for civil purposes has been estimated as being far from commensurate with the benefits likely to be derived. Mr. H. N. Worth, Malarial Engineer, was called in by Government in a consultative capacity; as was, also, Dr. Bruce Wilson, of the Rockefeller Foundation. Mr. Worth's report has been long received. But Dr. Bruce Wilson's report had not yet arrived. It is difficult to elaborate a satisfactory scheme for the future without studying the Engineer's and the Malariologist's reports together. This, so far, has not been possible. Time is, however, passing, and some start should be made well before next rains. Neither the Takoradi nor the Accra schemes serve to protect adequately the civil areas involved. Many of the channels will require to be filled in, and others converted to the sub-soil type. In others again, silting will require to be encouraged by means of "bolster" dams, or piling. It, also, appears likely that the excessive run-off of storm water from the extensive tarmac runways of the Accra Airport, hangar roofs, parade grounds, etc., will require to be accommodated temporarily in catchment reservoirs and the downrush of storm water controlled. The modification of these two schemes will require much consideration, effort and the expenditure of considerable funds before they can be considered to be on an economical maintenance basis. When the Inter-Allied Control Board ceased to function the sea outfall to the Korle Lagoon, Accra, had not been completed. There is, apparently, some conflict of engineering opinion as to the best method to adopt with this object in view. Again, the sea outfall near the new hospital, in connection with the Takoradi scheme, requires completion.

15. Relationships with the Services' Medical Authorities continued to be of the highest benefit to the Department. The Army was unstinting in its efforts to assist the civil Department in the serious epidemic of cerebro-spinal meningitis in the North early in the year. Medical Officers and other staff and transport were sent to assist. It is largely due to this help that the epidemic did not assume much more serious proportions. It may be added that the Military Authorities, in anticipation of a further recrudescence towards the end of the year, expressed their willingness to render further assistance. So far, happily, no further call has had to be made for help.

16. The standard of general sanitation was fairly well maintained. But the Health Branch staff has been greatly depleted, and several centres, including two municipalities, have been without whole-time Medical Officers of Health. Most of the anti-epidemic measures were necessary in the rural, more remote areas and

the larger, more organised centres had to be deprived of staff for the work. Up to the present municipal Medical Officers of Health remain Departmental officers. It is difficult to prognosticate as to long-term results, but a period of retrogression is apparently inevitable. It is also at present difficult to review general public health policy and activities for several important preventive measures, such as water supplies, buildings and town planning now devolve on special Departments and Boards. As from the 31st December, 1945, the Central Board of Health ceased to exist. In future, however, the Director of Medical Services will be supported by a Central Advisory Committee on Health Services, similar to the existing Central Advisory Committee on Education, which will be able to review all questions of public health.

17. Attendances at the various Child Welfare and Antenatal Clinics continue to increase, and a juncture has now been reached when the Medical Officers and Health Nursing Sisters can only compete with the greatest difficulty with the large numbers of mothers seeking advice for themselves or their children. It is essential that the cadres of Health Sisters and Health Visitors should be rapidly increased, for when all is said prevention is almost entirely education. It has now been decided that private midwives practising in the larger centres are sufficiently well established to stand on their own feet. Their subsidies have, therefore, been withdrawn and are now utilized for the purpose of establishing midwives in private practice in the smaller towns and rural areas. In spite of this, newly qualified midwives are evidently very reluctant to set-up in practice away from the larger centres.

18. The training of staff in all branches of the Department is proceeding actively. The building to house the Sanitary Inspectors School at Accra was commenced during the year; and before its close work was well advanced. An examination for the Certificate (West Africa) of the Royal Sanitary Institute was held in July, when there were five successful candidates. In January, 1945, three private students were successful in passing the Druggists' Examination; and in July there were five successful candidates. There were no entrants from the Government Dispensing School at either examination. At an examination for the Midwives' Board Certificate held in March, eleven pupil midwives qualified. Four of the successful candidates were members of the Nursing Service. At the September examination seven pupil midwives were successful. Two of the successful candidates have since been appointed Government midwives.

19. The Nurses' Training School and Hostel was opened in Kumasi before the middle of the year. The Department was fortunate in obtaining the services of two English Mistresses, one Science Mistress, and a Sister Tutor. The School started in a small way with seventeen pupils. So far, the School has been a distinct success; and in December a competitive examination was held for the selection of twenty post-primary pupils, who will commence a Pre-nursing Course of one year commencing in January, 1946, at Achimota College. On the conclusion of this course the pupils will pass on into the Nurses' Training School. It is proposed to build a new Nurses' Training School and Hostel in Accra in 1946, and towards the end of 1945 work on the site was in progress. The new School and Hostel designed for the accommodation and training of a hundred and twenty pupil nurses, is being erected in close proximity to the Gold Coast Hospital, Korle Bu. It is anticipated in the next few years that a sufficient number of candidates will come forward holding Secondary Education Certificates. When this eventuates, the Pre-nursing Course at Achimota will cease, and the pupils will pass directly into the Nurses' Training School. The experiment has been an extremely interesting one, and the Department was fortunate in having an experienced Senior Nursing Sister to guide the School through its opening stages.

In addition to the pupil nurses-in-training in the Nurses' Training School, the larger hospitals still undertake the training of pupil nurses under the old apprentice system in an endeavour to make good the shortage of nursing staff. Finally, all pupil nurses will enter the Nurses' Training School, and the apprentice nurse of the past will disappear.

Arrangements have, also, been made for the testing and training of ex-West African Medical Corps nursing orderlies on demobilization as ward attendants, or, if sufficiently satisfactory, as nurses.

Provision has been made in the estimates for 1946-47 for the erection of a training laboratory in connection with the Medical Research Institute. This will enable the Department to absorb ex-Army Laboratory Attendants and train them as microscopists for the busier outstation hospitals. The course of training for microscopists will extend over one year.

20. New legislation, affecting medical and health matters, was not a prominent feature. A Nurses' Bill and a Pharmacy and Poisons' Bill were before Council at the last Session. The Nurses' Bill was withdrawn for further study by Members; and the Pharmacy and Poisons' Bill was referred to a Select Committee. Both these Bills will be before the next Session of Council in March, 1946. An important Defence Regulation came into force controlling the sale of the sulphonamides to the public. These drugs can now be supplied to the public on medical prescription only. The amount on any one prescription is limited to 25 grammes. No prescription can be dispensed more than once.

21. No new hospital construction was commenced during the year. Towards the end of 1945, the Military Authorities abandoned the new Sekondi-Takoradi Hospital. The building of this hospital was completed just before the war, but it had not been opened for civil use. During the war this hospital remained in military occupation. The hospital was designed for some eighty beds, but during its tenure by the Military Authorities the bed establishment was considerably increased. The hospital will now be renovated, certain ancillary buildings constructed by the Military Authorities demolished, and additional staff quarters erected. The lift has not yet been installed, but it is intended to open the hospital as soon as possible and leave the lift for later provision. When ready, the hospital will be equipped and brought into use; and the old Sekondi Hospital will cease to be used as such.

22. The Red Cross Society worked in close harmony with the Department throughout the year. The Society has shown great interest in fostering occupational therapy at the Colonial Asylum, and has instituted a fund from which raw materials can be bought. After the sale of the articles manufactured the proceeds are used for recouping the fund, and purchasing small comforts for the inmates. Again, the Society has taken much interest in equipping civilian amputees with artificial limbs. Amputees are admitted to the Military Rehabilitation Centre on agreement with the Military Authorities. The Society pays all expenses for necessitous persons.

The Society has, also, interested itself in the work of the Military Hospitals, and has made generous contributions to the comfort of the patients.

The Society has once again donated school supplies, books and stationery to the Schools in the Leper Settlements at Ho and Accra.

23. The Rehabilitation and Limb Fitting Centre still remains under military control. But the Centre is likely in the near future to move to a site near the Gold Coast Hospital. A trained, African civilian mechanic, sent to the United Kingdom for training, has returned to the Gold Coast and has started work. The European Superintendent, who is undergoing a course of training in the United Kingdom, had not arrived in the Gold Coast by the end of the year. In the future it is intended that the Centre, in addition to its duties in connection with ex-military amputees, shall undertake the fitting of limbs for amputees from all civilian hospitals in the Gold Coast, and will undertake their rehabilitation. In the years to come the Rehabilitation Centre will more and more tend to serve the civilian public as the work in connection with the ex-military amputees gradually declines. It is estimated that some 120 major amputations are performed annually in the hospitals in the Gold Coast. This total, of course, may increase in post-war years as a result of the inevitable growth of road transport.

24. An important survey of the dental condition of the pupils attending Government schools in Accra was carried out during the year. A total of 1,770 pupils were examined. The result of the survey showed a comparatively high percentage of caries of the deciduous teeth (20·1 per cent for boys and 14·2 per cent for girls) as compared with caries of the permanent teeth (1·9 per cent for boys and 2·1 per cent for girls). The Dental Surgeon stresses the prevalence of diseases of the gums and periodontal membranes and blames particularly the lack of cleansing and the lodgement of food particles, insufficient mastication, mouth-breathing and the accumulation of salivary calculus. In the age group 16–20 years, 61·7 per cent of the boys examined, and 44·5 per cent of the girls, in the age group 14–18 years, require scaling. The Dental Surgeon stresses the necessity for a large number of the pupils to receive periodic scaling. The Dental Surgeon states that cases of grossly foul and neglected mouths were the result of pain arising from acute pulpitis or acute periodontitis which had prevented the pupils from cleansing the mouth thoroughly. The report is an interesting and important one, representing the first survey available covering an adequate number of school-children. The survey will be extended into other areas of the Gold Coast, and on the accumulated knowledge obtained the school dental scheme for the future will be elaborated.

(II) IMPORTANT DISEASES TREATED

25. A fair proportion of diagnosis of cases treated was made by Dispensers in charge of rural dispensaries and smaller hospitals not under immediate medical supervision. This factor must be borne in mind throughout this section of this Report.

26. *Diseases of the Enteric Group ((i) a, b and c).*—One hundred and ninety-five cases of diseases of the Enteric group were treated with 30 deaths, compared with 187 cases with 28 deaths in 1944. It is considered, as formerly, that these figures do not represent the true picture of the prevalence of diseases of this important group. Out of 61 cases investigated at the Medical Research Institute 55 were due to *S. typhi*, 5 to *S. paratyphi A* and one to *S. paratyphi B*.

27. *Small-pox (5).*—Seven cases with no death were treated, as compared with 69 cases with no death in 1944. It will be appreciated that small-pox is comparatively rarely treated in an established hospital. Most cases occur in rural areas, and are treated in temporary hospitals of bush construction: *vide* section 8 of Part (I) of this report.

28. *Cerebro-spinal Fever (16).*—One thousand two hundred and sixty-six cases with 178 deaths were treated. In 1944 some 138 cases with 28 deaths were treated in connection with established hospitals. As in the case of small-pox, most cases occurred and were treated in far-removed rural areas. During 1945, 10,368 cases with 1,199 deaths were returned for the Gold Coast as a whole: *vide* section 9 of Part (I) of this Report. Most of the cases occurred in the Bole, Wa, Lawra-Tumu area of the Northern Territories. In this extensive area the outbreak assumed major epidemic proportions, and has been made the subject of a special report, the publication of which is expected shortly. The epidemic involved an area of country of nearly 10,000 square miles involving extensive travelling of the staff engaged in its control. The staff suffered considerably from water shortage; and the jeeps, generously made available by the Military Authorities, proved invaluable in distributing supplies of all sorts and facilitating inspections.

Sporadic cases commenced about the 14th October, 1944; and the real epidemic commenced on the 1st January, 1945. The Harmattan (Dry Season) was mild and extended from the middle of November, 1944, until mid-March, 1945. Almost all the heavily infected villages were on the main roads and main bush paths, i.e. communication was the main factor in the spread of the infection.

Owing to the severity of the infection it was found necessary to increase massively the dose of Sulphanilamide during the first nine hours of the disease. The following table was used throughout the epidemic:—

SULPHANILAMIDE :

0·5 gm. tablets	1st Day	2nd Day	3rd Day	4th Day	5th Day
<i>Adults</i>	6-4-4-2	3-3-3	2-2-2	2-2-2	2-2-2
<i>Serious</i>	6-6-4-2	4-4-4	3-3-3	2-2-2	2-2-2
<i>Children—</i>					
10-12 years	4-2-2-1	2-2-2	2 - 2	2 - 2	2 - 2
6-8 „	3-2-1-1	2 - 2	1-1-1	1-1-1	1 - 1
3-4 „	2-1-1-½	1-1-1	1 - 1	1-½-½	—
1½-2 „	1-1-½-½	1-½-½	½-½-½	½-½-½	—
1 year	1-½-½-½	½-½-½	½-½-½	½-½-½	—
3 months	½-½-½-½	½-½-½	½ - ½	½ - ½	—

Sulphanilamide was more effective than Sulphapyridine; and Streptocide was the least effective of all. To combat the short period usual between onset and death, the Chief of any village where a case or sudden suspicious deaths had occurred, or where spread was anticipated was given a minimum of four tablets of Sulphanilamide and the disease was explained to him. He was instructed to give one tablet at once for every "double hand span" (18") of a patient's height and to report at once to the nearest control camp. The result was that a case, instead of dying in 2, 4 or 6 hours, survived up to 12 hours or more. If his village was far away, the Chief was instructed to repeat the dose in three hours' time. The consensus of opinion is that faulty diagnosis was not common, the commonest error being in the case of pneumonia in children. In the Bole, Wa, Lawra-Tumu epidemic 9,863 cases with 1,056 deaths (including 285 untreated) were recorded. The mortality-rate for treated cases was 7·8 per cent, and the total mortality-rate was 10·7 per cent. The peak of the epidemic was reached about the 27th February, 1945. After this date it slowly declined and died out in May. The prevention of recrudescence of outbreaks of cerebro-spinal meningitis in the North (particularly in the north-west) depends very largely on the question of housing. Prevention can be summarized very briefly—increased ventilation and the avoidance of overcrowding. The "fortress" type of house does not lend itself readily for improvement. The "round-house" compound, however, with carefully spaced houses of the improved type, i.e. provided with windows yielding cross ventilation, and with crenellated vents at the wall plate, can be made a very satisfactory type of dwelling. It is extremely important, with the lesson of 1945 before the country, not to permit falling building standards in Ashanti and the Colony, e.g. decreased room dimensions, lack of cross ventilation and the closure of verandahs.

29. *Rabies* (17).—Thirty cases with five deaths were treated, compared with one fatal case in 1944. The return for 1943 was 12 cases with one death. In spite of intensive efforts no decrease in the prevalence of rabies can be reported. The following extract from a report written by a Dispenser in charge of a rural dispensary is worth recording:—

"On the 28th June, 1945, one of the cases, a boy who had the bite on the right eyebrow and was put on intensive treatment, was brought to the hospital by his father complaining of headache, fever, difficulty in swallowing, insensibility, restlessness and palpitation. He drew his head backward at any attempt to drink water. His temperature was 101. He died the day following admission. The dog which ran amok was killed by some farmers in their farm, and according to what I understand the carcase was taken away by some passers-by to be used as meat. It was, therefore, impossible to secure the brain of the suspected rabid dog for examination."

30. *Tetanus* (18).—Two hundred and fifty-five cases with 51 deaths were recorded. In 1944 some 224 cases with 49 deaths were treated. The Medical Officer, Dunkwa, comments on the large proportion of cases in which it is impossible to discover the lesion through which the infection gained entrance. It will be appreciated that, in such diseases as tetanus and rabies, patients are very liable to be removed from hospital by their friends when the case appears to them to be hopeless.

31. *Tuberculosis of the Respiratory System* (19).—Two thousand and fifty-two cases with 284 deaths were treated, compared with 2,086 cases and 309 deaths in 1944. The number of deaths recorded represent 10·9 per cent of the total number of deaths from all causes which occurred in hospital. In 1944, the percentage was 12·6 per cent. Of the total deaths resulting from pulmonary tuberculosis recorded in hospital no less than 89·1 per cent were male deaths. Ten years ago, in 1935, the following appeared in the Annual Report of the Medical Department:—

"As a 'killing' disease entity, tuberculosis takes pride of place. . . . It is unnecessary, therefore, to stress its importance. The disparity between the number of female and male deaths is capable of ready explanation. The majority of the male deaths occur in the 25-45 age group on which the 'heat and burden' of the day falls. These men are usually of the labouring class, they are often undernourished and live in overcrowded, insanitary conditions. They are subject to overstrain and exposure to a high degree. Whether tuberculosis is generally on the increase is hard to say. Tuberculosis of the community in the populous centres is believed to be considerable and it is possible that a degree of resistance may be in the process of being acquired. Generally, resistance to the infection is practically non-existent. In the more rural areas it is thought that tuberculosis is on the increase; in such areas, however, death registration does not apply. Most of the labour is drawn from these areas and the returning tuberculous ex-worker must do much to spread the disease in his community. Undoubtedly the deep mining industry influences the problem. To what degree, it is difficult to sum up for the mine labourer is not compounded and, usually, on the first signs of the establishment of the disease he leaves the mine. Frequently, after a stay of varying period in some overcrowded and insanitary local village, he proceeds back to his country to die before he arrives home.

"The causes for this high death-rate are not difficult to find. Resistance is low, if existent, undernourishment is common and the general dietary is not a well-balanced one, housing conditions more often than not are deplorable and overcrowding is rife, the spitting habit is universal and ignorance of the rudimentary laws of health is widespread. The prevention of tuberculosis can briefly be summarized under three heads:—

- (a) The all-round improvement in general environmental sanitation, with particular reference to housing and overcrowding. A much better type of house is being erected in most of the larger centres on systematic layouts, but the majority of such centres show extensive areas occupied by overcrowded "rookeries." The question in rural areas, also, presents difficulties. Progress in such areas must be slow, and to a great extent depends on education and example.
- (b) The steady extension of lay-outs in rural and township areas.
- (c) Education of the people in the rudimentary laws of health preservation, with particular stress on the spitting habit and the necessary provision of adequate ventilation, the avoidance of overcrowding, etc. Such education takes time and promises best when applied to the school-child.

“ The future of tuberculosis in the Gold Coast resolves itself into a race between sanitation in its widest application and the disease. Tuberculosis is not a showy ‘ tropical ’ disease and for this reason may fail to receive the public attention it merits. It is capable of killing throughout the length and breadth of the Gold Coast, and from a health standpoint is the most important problem for the future.”

The above, written ten years ago, is applicable to 1945. With a percentage of deaths of 10·9 to total deaths from all causes which occurred in hospital, pulmonary tuberculosis, as in the past, heads the list of killing diseases. Second to pulmonary tuberculosis comes the combined disease group, bronchitis—broncho-pneumonia—lobar-pneumonia, which accounted for 9·7 per cent of the total deaths from all causes which occurred in hospital. In the registration areas of the Gold Coast pulmonary tuberculosis was responsible for 99 per thousand registered deaths : *vide* Table III, page 10.

32. *Other Tuberculous Diseases* (20).—Four hundred and eighty-one cases were treated with 17 deaths, as compared with 394 and 37, respectively, in 1944. The total represents 18·9 per cent of tuberculous diseases (all forms) compared with a percentage of 16 for 1944.

33. *Leprosy* (21).—Eight hundred and fifty-four cases with 38 deaths were treated. The total for 1944 was 786 with 41 deaths. In addition 510 cases were treated as out-patients compared with 413 in the previous year. The Leper Settlement at Ho, the only one of any size in the Gold Coast, on the 31st December, 1945, accommodated 414 lepers (265 males and 149 females). Of the inmates of the Ho Settlement, during 1945, some 49 cases were arrested ; 120 were greatly improved ; 57 were improved ; 50 were slightly improved ; 62 remained stationary ; 24 died ; 76 became worse and 21 ran away.

34. *Venereal Diseases* (22 *a, b and c*).—Eight hundred and fifty-one cases of syphilis were treated. The number of deaths resulting from syphilis was nine. In 1944, some 796 cases were treated with 19 deaths.

Gonorrhœa and its complications were responsible for 9,468 cases with 32 deaths, compared with 8,917 cases with 20 deaths in 1944. Other venereal diseases accounted for 1,202 cases with six deaths. In 1944, the total was 1,408 with no death. Syphilis is still, generally, a comparatively uncommon disease, the cases treated representing 0·2 per cent of all cases seen. Gonorrhœa, on the other hand, is common, and is becoming increasingly difficult to treat owing to the prevalence of sulphonamide-resistant strains, particularly in the better-class sufferer. The above figures are inclusive of the attendances at the Special Clinic at the Gold Coast Hospital.

35. *Yellow Fever* (23).—A total of five cases of yellow fever came to light in 1945. Of these cases three were males (one European and two Africans) and two African females. Four cases died, one African female case recovering. The fatal European case was reported to have been inoculated in 1943, but investigation subsequently showed that the vaccine was probably ineffective owing to delays in transport allowing the temperature of the contents of the thermos container to rise above the level at which the vaccine remains viable. The cases were infected at the following places : Nsuta (Western Province), Winneba (Central Province), and Nsawam and Mangoase in the Eastern Province of the Colony.

36. *Malaria* (24 *a, b, c and d*).—Some 48,898 cases of malaria were treated. There were 80 deaths. In 1944, the total was 50,193 cases with 100 deaths. The percentage of deaths to total deaths from all causes was 3·1 per cent, compared with 4·0 per cent for 1944. The totals for 1945 and 1944 are very comparable as is usual when hospital figures are considered. The mortality-rate for the registration areas (Table III, page 10) shows a considerable fall in 1945, doubtless as a result of climatic conditions, 1945 being a year of low rainfall.

37. *Blackwater Fever* (25).—Thirty-seven cases with six deaths were recorded, compared with 44 cases with three deaths in 1944. The total cases treated represents 0·3 per cent of all cases of malignant tertian malaria seen, compared with 0·4 per cent in 1944. Since 1935, the incidence of blackwater fever has taken an interesting course. In 1935 some 16 cases (one European) were reported. In 1939 thirty-four cases (six European) were recorded. In 1941 the total rose to 80 cases (seven European). Thereafter, there was a steady fall 78 (seven European), 56 (three European), 44 (one European) and in 1945 thirty-seven cases of which four were European. It is difficult to account for the increased incidence of African cases during the war years. There has been much movement of population corresponding to the growth of war industries. And the increased incidence of blackwater fever may possibly be due to this factor. It has been noticed, previously, that blackwater fever, as a general rule, occurred among Africans (or their families) who had recently moved from one part of the Gold Coast to another. The causes may chiefly be climatic and periodic reinfections with a strain of parasite of a toxicity to which they are not accustomed. In no locality, or centre, in the Gold Coast is malaria control effective enough to protect the average African from repeated reinfections, or to interfere, it is thought, with the acquisition of the normal African degree of tolerance to malaria.

38. *Trypanosomiasis* (27).—Three thousand nine hundred and twenty cases of trypanosomiasis were treated during the year. The total number of deaths was 80. In 1944, the total number of cases treated was 4,092 with 112 deaths. The percentage of deaths to the total number of deaths from all causes was 3·1 compared with 4·6 in 1944.

39. *Yaws* (28).—One hundred and fifty-five thousand and sixty-eight cases with four deaths were treated during the year. In 1944, the figures were 143,794 cases with ten deaths. The increase in the number of cases treated was, therefore, 11,274. Valuable experience was gained as a result of the activities of the Anti-Yaws Campaign operating in the Yendi area of the Northern Territories. In this connection the Medical Officer in charge writes :—

“ The attitude of the people is one of increasing confidence and appreciation of the campaign principle. The intermittent treatment in each area is popular. For the first time the district has become aware of the state of affairs which has been prevailing for generations. Conscientious objectors are fast disappearing and the varied reasons in favour of delaying treatment have largely disappeared also. Propaganda has played a part in attaining this end but the effects of regular treatment with improved drugs has had the greatest effect.”

As mentioned, section 12, Part (I), of this Report, Bisglucol has replaced Sobita. The cost of this drug, i.e. 1d.-1½d. per adult injection, is much more expensive than Sobita. But the Medical Officer in charge, for the following reasons, considers Bisglucol the more useful drug: the services of Dispensers can be dispensed with; the cost of Ametox (which is required in 5 per cent of all cases treated with Sobita) is saved; Sobita has to be delivered to teams freshly prepared and is a limiting factor to the independence of treatment teams, and a brake on the expansion of the campaign.

40. *Helminthic Diseases* (30, 31 and 32).—Ankylostomiasis was responsible for 1,992 cases with 38 deaths. In 1944, the total was 1,751 cases with 14 deaths. Schistosomiasis yielded a total of 1,645 cases with two deaths, compared with 1,246 cases with five deaths in 1944. Other helminthic diseases accounted for 5,533 cases with 12 deaths, compared with 6,247 and eight, respectively, in 1944. In most areas of the Gold Coast clinical ankylostomiasis is not commonly seen, but the infestation is much more frequent than the above figures indicate. The infestation is stressed from the Axim district, Keta district, Cape Coast and, as previously, from the Colonial Asylum, Accra. The importance of helminthic diseases is, possibly, as well recognised in maternity work as in other medical activities. Routine disinfestation and iron therapy are antenatal measures frequently required. Ascariasis in the young child, possibly undernourished and invariably malaria infected, can be a serious condition. Again, a heavy ascariasis infestation in an adult, whose diet is deficient in protein, appears particularly prone to deficiency œdemá. Schistosomiasis is a much commoner infestation than the above figures reveal and is responsible for much chronic ill-health.

41. *Cancer and other tumours* (34).—Malignant tumours accounted for 164 cases with 17 deaths. In 1944, the figures were 108 cases with 10 deaths. Non-malignant tumours produced 893 cases with 12 deaths, compared with 914 cases and four deaths in 1944. Undetermined tumours yielded a total of 321 cases with eight deaths, compared with totals of 129 and one, respectively, in 1944.

42. *Rheumatic conditions* (35*b*).—Fifteen thousand four hundred and ninety-two cases were reported with two deaths, compared with 11,848 cases with no death in 1944. These conditions to a great extent are, probably, late manifestations of yaws and gonorrhœa, both common ailments.

43. *Nutritional Diseases* (37, 38, 39 and 40*a*):—

TABLE I

	1944		1945		+ Increase — Decrease
	Cases	Deaths	Cases	Deaths	
Scurvy (37)	25	1	14	—	— 11
Beriberi (38)	38	6	38	3	—
Pellagra (39)	100	8	103	6	+ 3
Other nutritional diseases (40 <i>a</i>) ...	1,326	69	2,064	35	+ 738
Total	1,489	84	2,219	44	+ 730

Cases of nutritional diseases show an increase of 730 over the total for 1944. But the number of deaths resulting decreased by 40. It is extremely difficult to discuss, briefly, the part played by nutritional deficiencies in the general health of the Gold Coast. In many localities an undercurrent of deficiency complicates all superimposed pathological conditions. Diagnosis in such cases may concentrate on the intercurrent infection and ignore the basic deficiency. In this way statistical evidence of malnutrition may be lost. Even in the coastal area within easy access to the sea, the local dietary in certain localities is not satisfactory. The Medical Officer of a coastal district in an interesting report emphasizes the effects of a faulty dietary on a population in which hookworm and ascaris infestations are common, and in which yaws and malaria are widespread. The following points are stressed: the local dietary is seriously lacking in protein; cassava is too easily grown and enters very largely into the dietary; rice is grown, but is not much used; little fish is available, most is smoked and exported for sale; first-class protein could be made available from sheep, goats and fowls. But these are in short supply and generally unobtainable owing to high prices; tomatoes and okros are not plentiful; groundnuts are almost unprocurable; green vegetables are almost unknown; coconuts are fairly extensively used and the oil is used for cooking; palm-oil is used fairly extensively. Finally, the local people are described as being indolent and growing almost nothing in the vegetable line. Two bullocks are reported to have been slaughtered locally in the last ten years, one for the Coronation and one for V.E. Day. In contradistinction to the general inhabitants, the fisher-folk (as elsewhere) are described as being well nourished, well developed and very active.

44. *Affections of the Respiratory System* (49, 50 and 51).—Bronchitis accounted for 21,801 cases with 15 deaths; broncho-pneumonia for 1,058 cases with 99 deaths; lobar-pneumonia for 1,347 cases with 81 deaths; "otherwise defined" pneumonia for 1,356 cases with 36 deaths, and other diseases of the respiratory system for 4,568 cases with 21 deaths. Diseases of this combined group were responsible for 252 deaths, or 9·7 per cent of deaths from all causes. In 1944 this percentage was 11·8, and in 1943, 10·8 per cent.

45. *Nephritis—all forms* (58*a* and *b*).—One thousand and fifty-two cases of all forms of nephritis were treated with 69 deaths, compared with 844 and 97, respectively, in 1944. In countries in which yellow fever is endemic, such as the Gold Coast, acute nephritis can assume an importance not usually attained elsewhere.

46. *Pregnancy, Child-birth, etc.* (60).—Some 41,407 cases with 221 deaths, were seen and treated. For further particulars see Table VIII.

III—VITAL STATISTICS

I. GENERAL POPULATION :

TABLE II

	1945	
		Total number registered
Total estimated population	3,962,692	—
Estimated population of registration areas	355,780	—
*Birth-rate per 1,000 persons living	37·4	13,615
*Death-rate per 1,000 persons living	26·2	9,506
Infantile mortality-rate	119	1,622
Still birth-rate per 1,000 total births	70	959
Maternal mortality per 1,000 total births	18	269
Deaths from respiratory diseases per 1,000 deaths registered	124	1,177
Deaths from pulmonary tuberculosis per 1,000 deaths registered	99	944
Deaths from intestinal diseases per 1,000 deaths registered	65	616
Deaths from malaria per 1,000 deaths registered	88	838
Deaths due to starvation	45	—

* Weighted average.

47. The estimated population must be regarded as liable to increasing error as no census has been taken since the 1931 decennial census. It will be noted that the estimated population of the Registration Areas is approximately one-tenth of the total estimated population of the Gold Coast.

48. The following tables compare the rates recorded for 1945 with those returned for 1944 :—

TABLE III
DECREASES

	1944	1945
Death-rate per 1,000 persons living	27·8	26·2
Infant mortality rate	125	119
Deaths from respiratory diseases per 1,000 deaths registered	125	124
Deaths from pulmonary tuberculosis per 1,000 deaths registered	104	99
Deaths from intestinal diseases per 1,000 deaths registered	69	65
Deaths from malaria per 1,000 deaths registered	110	88

TABLE IV
INCREASES

	1944	1945
Birth-rate	37·2	37·4
Still birth-rate per 1,000 total births	67	70
Maternal mortality per 1,000 total births	16	18
Deaths due to starvation	31	45

49. From the available figures it cannot be said that the health of the population, living in the Registratiion Areas of the Gold Coast, suffered any general decline during 1945.

II. GENERAL EUROPEAN POPULATION :

TABLE V

	Official	Non-official	Total
Number of Europeans resident	827	2,616	3,443
Number invalided	42	70	112
Number of deaths	3	15	18

50. The number of Europeans resident rose from 3,147 in 1944 to 3,443 in 1945. The number of invalidings rose sharply from 60 to 112. The number of deaths fell from 19 in 1944 to 18 in 1945. It was anticipated that the number of invalidings would rise on the cessation of hostilities. The stimulus of the war effort, to a considerable extent, counterbalanced the cumulative effects of long tours, the increasing strain resulting from staff shortage and private anxieties. On the lifting of the wartime stimulus, it was inevitable that the strain of the war years should assert itself and that this factor would be reflected in a definite and sudden rise in the number of invalidings.

51. The diseases responsible for the invalidings of officials were: malaria—seven ; nervous conditions and insomnia—six ; gastric and duodenal ulcer—six ; diseases of the heart and circulatory system—four ; anaemia—three ; and single instances of such chronic conditions as dysentery, dyspepsia, sinusitis,

choleliathiasis, bronchitis, arthritis, dermatitis, appendicitis, vertigo, urethral stricture, colitis, blackwater fever, recurring abdominal pain, intermittent pyrexia, epidermophytosis and myalgia. Chronic conditions preponderated. And it is likely that, but for the war, the invalidings would have been distributed more evenly over the last few years.

52. The causes of deaths of officials were: malignant tertian malaria and myocardial failure, blackwater fever, and fractured skull.

53. The causes of invalidings of non-officials were: debility—15; malaria malignant tertian—nine; nervous conditions—eight; diseases of the liver—five; pulmonary tuberculosis—four; anaemia—four; appendicitis-chronic—three; diseases of the eye—three; diseases of pregnancy—two; diseases of generative organs (female)—two; diseases of heart and circulation—two; and single instances of such conditions as: congestion of lungs, fibrositis, arthritis, eczema, ano-coccygeal cyst, diphtheria, bronchitis, gastric ulcer, cerebral haemorrhage, sprain, hernia, insomnia and jaundice.

54. The causes of deaths of non-officials were: malaria malignant tertian—five; blackwater fever—three; uraemia; cerebral tumour; interstitial nephritis; yellow fever; diabetes, hypertension and heart failure; enteric fever and old age—one each.

55. It is of importance to note that of eighteen European deaths, malaria and blackwater fever were responsible for no less than ten deaths. The average European in the Gold Coast, apparently, is less inclined than formerly to place any reliance on suppressive drugs, and takes little, if any, interest in protecting himself against mosquito attack. As a result malaria remains the predominant factor and will remain so until the situation is squarely faced. The threat of yellow fever has been very largely diminished. But malaria continues to be a universal and continuous menace against which personal prophylaxis is the first, and one of the most important, measures of defence.

In the following table an effort has been made to divide the non-official figures into component groups. But statistics, during the present somewhat transitional period, cannot be as exact as formerly, or as reliable as will be possible in the future.

TABLE VI
NON-OFFICIAL EUROPEANS

	Number	Invalided	Died
Merchants	877	34	7
Missionaries—Males	182	8	3
Missionaries—Females	136	1	—
Mining community	780	9	5
Women (non-official)	574	18	—
Children (general)	67*	no record	—
Total	2,616	70	15

* unreliable.

III. OFFICIAL AFRICAN POPULATION

TABLE VII

	Number Resident	Number Invalided	Number of Deaths
	5,813	41	11

56. The number of African officials resident rose from 5,167 to 5,813. The number of invalidings rose from 40 in 1944 to 41 in the year under review. The number of deaths, also, rose from ten to eleven.

The causes of the invalidings of African officials were: defective vision—seven; hypertension—five; pulmonary tuberculosis—four; cerebral haemorrhage—three; defective hearing—three; cerebro-spinal syphilis—three; cardiac conditions—two; chronic colitis; fibroids; chronic appendicitis; manic depressive insanity; injury following fall; osteo-arthritis; anaemia; cirrhosis of liver; spondylitis; hydrocele; vertigo; debility; chronic headache and abnormality—one each.

57. The causes of the deaths of African officials were: pulmonary tuberculosis—three; retention of urine and general peritonitis—one; debility—one; strangulated hernia—one; cerebral haemorrhage—one; blackwater fever—one; myelogenous leukaemia—one; cerebral thrombosis—one, and syphilis tertiary—one.

(IV) HYGIENE AND SANITATION

It is now a matter of considerable difficulty commenting in detail on such matters as labour conditions, housing and town planning and water supplies, when these activities are the proper functions of other Departments and Boards. Comments will, therefore, be made in very general terms.

58. *Labour conditions.*—Last year the statement was made that, apparently, the peak period of employment had passed, but from observations of the Department there was no large-scale permanent unemployment. Since this was written, the general consensus of opinion is, apparently, that unemployment

has somewhat increased. The cost of staple foodstuffs remains high, and claims to maintenance by unemployed tribal "brothers" add to the budgetary difficulties of the labourers in regular employment. In a census carried out in Takoradi, a centre largely affected by new wartime industries, out of a population of 16,764, unemployed able-bodied males numbered 2,764. The only labour trouble actually experienced by the Department during the year was a threatened strike of conservancy labour at Cape Coast. This was settled by the granting of a soap and kerosene allowance. The cost of food and clothing is undoubtedly giving rise to a certain amount of general discontent. The number of deaths registered as due to starvation rose from 31 to 45. The general consensus of opinion is that there is a good deal of minor malnutrition among the casually employed persons thronging the larger centres, but malnutrition to a severe degree is not common, i.e. the problem is more a qualitative than a quantitative one.

59. *Housing and Town Planning*.—Overcrowding and congestion must still be considered as the rule rather than the exception. Although the possibilities of employment have diminished there is little visual evidence of any falling-off in the number of able-bodied persons in the larger centres chiefly involved in previous wartime industry. Private building is progressing, and is reflected in the increased number of building permits submitted, and passed, in the larger centres. Congestion and overcrowding, however, are never likely to be influenced by private building enterprise. The average house-owner is altogether too prone to let every available corner of his house, out-buildings and verandah to those seeking shelter and able to pay for it. The only solution is the extension of existing and the institution of new communal building programmes and housing estates. Doubtless, improvement will rapidly follow the setting up of Regional Planning Committees.

60. *Sewage Disposal*.—Little progress can be reported. Pan-latrines in the central congested areas of the larger and older centres are often an abominable nuisance. They are, often repeatedly filled and require frequent emptying, often during busy times of the day. Water-borne sewage systems are overdue. Much excrementitious matter, also, finds its way into the street gutters, where mixing with sullage water and street drainings constitutes, at times, a first-class nuisance. In less congested areas, larger villages and institutions, the septic latrine serves a useful purpose. When over-burdened, as they often are in the vicinity of lorry parks and markets, they rapidly cease to function and require long periods of rest. The only procedure is to install an adequate number, simultaneously, in any one area.

In the Northern Territories, septic latrine and composting systems are in use in several areas. With appropriate safeguards this process may well be extended. But it would be premature to produce large quantities of compost before the people were sufficiently educated to take full advantage of this bye-product.

"Bore-hole" latrines are useful in selected localities. But they are not generally applicable.

Extensive rural areas possess no latrines of any sort. The areas round the villages are saturated with excreta, and worm infestation of man and live-stock is the rule.

61. *Water Supplies*.—In so far as this Department is concerned, progress has been slow. In the past many small towns and larger villages, particularly in Ashanti, have been provided with simple, but much improved water supplies. In recent years, owing to lack of staff and funds, the work has slowed down, and it has been difficult to effect even the maintenance of some of the existing supplies. As explained at the commencement of this section of the Report, rural water supplies are now the concern chiefly of the Temporary Water Department.

62. *Food in Relation to Health and Disease*.—Much could be written on this subject. High prices, transport and distribution difficulties undoubtedly, at present, make it difficult for the ordinary labourer to meet his essential requirements. The outstanding deficiency is in high value protein. This want (*vide*, also page 9) is not confined to the forest area and the North. The approach to the problem briefly appears to be dependent on the extension of the fishing industry, the modernisation of fish-curing methods and improved distribution; the extension of animal husbandry particularly in the forest belt; the increased cultivation of the groundnut and the soya bean; in the North the increased production of existing staples, the establishment of intermediate crops, and the increased supply and consumption of red palm-oil; the establishment of dairy industries where conditions permit. Culinary methods are often crude and laborious, but interference with local processing methods should be avoided. As a general rule, fresh green vegetables and fruit are not indulged in to the extent they should be. However the problems of nutrition are viewed, improvement must take time, and be preceded by education, example, propaganda and a general elevated economic status. The factor of time notwithstanding, there is probably no more ready method of relieving much of the worst effects of endemic disease than through improved nutrition.

63. *Mosquito Control*.—The control of domestic mosquito-breeding proceeded, as previously, throughout 1945. Some 3,285,110 house and compound inspections were made. On 9,228 occasions, mosquito-breeding was found yielding a larval index of 0.28.

The position with respect to the extensive anti-malarial drainage systems, inaugurated by the Inter-Allied Malaria Control Board at Accra and Takoradi, has been generally described in paragraph 14 of Part (I) of this Report. Whatever the ultimate fate of the extensive systems of uneconomical earth channels and decisions concerning sea outfalls, it is considered that the final solution of the problem will depend mainly on chemical methods of adult and larva destruction.

During the year an extensive experiment was carried out at Takoradi to ascertain whether the repetitive spraying process (pyrethrum-kerosene) could, with advantage, be replaced by residual D.D.T. spraying methods. It was found that a one per cent solution of D.D.T. used to give a calculated residual deposit of 38.5 mg. of D.D.T. per square foot, continued to produce a relative absence of mosquitoes after 18 weeks from the date of the initial spraying. Over the first nine weeks of this period the proportion between mosquitoes infesting the D.D.T. treated and control rooms rose gradually to 1:4. When the dosage was reduced to 11.9 mg. D.D.T. per square foot, the proportion 1:4 was reached in 11 days. Complete parity with the control result ensued in a total of 28 days. The results of these trials made it clear that D.D.T.

would prove as efficacious in this area as elsewhere. Further, a single application of the relatively economical 1 per cent solution in a dosage approximating to 20 mg. D.D.T. per square foot would suffice to give reasonably efficient lethal results over a period of two months or more. Accordingly, arrangements were made to discontinue the routine twice-weekly spraying with pyrethrum-kerosene of all African dwellings in the Takoradi township and village areas in favour of residual D.D.T. treatment.

64. *School Hygiene*.—At present there is no organised school medical service, but the depleted staff of health officers keeps in as close touch with the schools as possible. As mentioned in Part (I) of the Report, a Dental Survey of the school-children attending Government schools in Accra was carried out during the year with a view to the establishment of a School Dental Service in the future.

65. *Vaccinations*.—During the period under review 447,119 vaccinations and revaccinations against small-pox were carried out. Of this total 196,267 persons examined later gave a positive rate of 93 per cent.

II—SPECIAL SERVICES

(V) PORT HEALTH AND AIR TRAFFIC

66. No port or airport was declared infected during the year. Anti-amaryl precautions at the Takoradi and Accra Airports remained under the control of the Royal Air Force.

(VI) MATERNITY AND CHILD WELFARE

TABLE VIII

Type of Centre	ATTENDANCES	
	Children	Expectant Mothers
Government Centres	52,738	30,990
Red Cross Centres	42,819	36,893
Mission Centres	97,126	6,238
Total	192,683	74,121

In 1944 the total attendances were 147,666 and 63,373 respectively. There were 124,002 attendances at the district weighing centres at Accra and Kumasi during the year. The pressure of work at the Welfare Clinics is excessive and an increased staff of Health Sisters and Health Visitors is required. The prospects for the future are obviously promising ; but there is a darker side to the picture. In this connection the Medical Officer of an important municipal centre writes :—

“ It is surprising and not a little disappointing to find that, in this centre of so much education and enlightenment, there still exists a desire among Africans to take their sickness to the local fetish or herbalist while right in his town there exists a fine modern hospital. It is notably so with maternity cases who receive the most extraordinarily cruel and primitive treatment before being brought to hospital *in extremis*. Such cases are not confined to bush villages, but many come from the town itself.”

Similar reports were received from many centres.

(VII) HOSPITALS, DISPENSARIES, LABORATORIES, ETC.

67. There are four European Hospitals situated at Accra, Takoradi, Kumasi and Tamale. In addition there is a small European Annexe to the African Hospital at Cape Coast. The European Hospital at Winneba is retained by the Military Authorities as a convalescent centre. There are 21 African Hospitals under the direct control of Medical Officers and seven at present in charge of African Dispensers.

68. Two Government Welfare Clinics are situated at Accra and Kumasi respectively.

The Gold Coast Branch of the British Red Cross Society maintains Welfare Clinics at Koforidua, Cape Coast and Sekondi. The Sekondi and Cape Coast Clinics operate several ancillary centres. The Roman Catholic Mission has established Welfare Clinics at Djodje, Kpandu, Eikwe and Akim Swedru.

69. Government maintains 38 village Dispensaries distributed throughout the rural areas in the Colony, Ashanti and the Northern Territories. Seventeen of these are situated in the Northern Territories, eight in Ashanti and thirteen in the Colony.

70. The European Hospitals accommodate 96 beds ; and the African Hospitals a total of 1,328 beds and 176 cots. The total bed strength of the hospitals is little guide to the work done. Some 1,500 beds and cots to a population now approaching 4,000,000 is a very low provision, and many emergencies have to be accommodated as best possible. Again, many treated as out-patients would be admitted as in-patients if the required bed accommodation was available.

71. Return A of this Report shows the diseases treated at all Government Hospitals and Dispensaries throughout the year, grouped under 65 heads. The number of in-patients treated was 37,107 compared with 33,871 in 1944, i.e. an increase of 3,236. It is difficult to see how the annually increasing pressure on the existing bed establishment can be borne indefinitely.

The prospect of a decreasing medical staff, as a result of post-war retirements, also, cannot be faced with equanimity. The demand for increased medical facilities, better hospital conditions and extended staff (both European and African) is incessant, and some years must elapse before it can be met, even granted the most favourable circumstances.

72. The total number of deaths that occurred in hospital in 1945 was 2,597, or approximately 7 per cent of the total number of in-patients treated. In 1944 the percentage was 7·2, and in 1943 7·7.

73. The total number of out-patients treated was 493,962 compared with 466,237 in 1944, an increase of 27,725. Of the total number of out-patients 154,859, or 31·4 per cent, were yaws cases. This total includes the number of cases treated by the Anti-Yaws Campaign. As the anti-yaws activities spread it is difficult to envisage what total number of yaws cases will be treated and retreated annually. Even in the congested slum areas of the larger centres indigenous yaws is a comparative rarity. It is considered that a detailed study of the endemicity and methods of transmission of yaws would be valuable, and in the long run economical.

In the busier, single-handed hospitals the burden of out-patients falls heavily on the Medical Officer, who is often without clerical and clinical pathological aid. It is considered that the time is rapidly approaching when the training of African subordinate medical staff will have to be seriously considered, for it appears to be doubtful whether the Medical Officers (European and African) available at any time, will ever be able to cover adequately the area required.

74. During the year the Medical Research Institute carried out some 22,212 miscellaneous examinations and 182 post-mortem examinations, compared with 20,762 and 272, respectively, in 1944. The report for 1945 contains much of interest and it is regretted that it cannot be reproduced *in extenso*. The report contains a valuable note on "Sickle-cell Trait and Sickle-cell Crisis." Using the culture method for detecting sickle-cell trait, 2,015 women attending the antenatal clinic at the Maternity Hospital were examined and 350, or 17·3 per cent, were found to possess the trait. It was thought that the number of deaths amongst children of mothers possessing the trait might significantly exceed the number of deaths in children of mothers not having the trait. Examination of the figures did not support this.

During the year six cases of sickle-cell crisis came to autopsy. Two of these cases were children of 12 years and nine months, respectively. In these the crisis was obviously brought on by a general anaesthetic. Microscopically, the capillaries of the lungs and brain were crammed with sickle-cells. The sinusoids of the liver were dilated and packed with sickle-cells, and the spleen showed malpighian corpuscles surrounded by "lakes of blood." The red blood corpuscles in the splenic pulp in cases of crisis tend to be long with somewhat square ends, and resemble potato-chips.

Penicillin became available for use late in 1944, and the use throughout the early part of 1945 was controlled by laboratory investigation. This measure threw a considerable amount of work on the bacteriological department of the laboratory. The list of publications during 1945 was, as follows:—

Robinson, G.: "Human infection with *Pasteurella septica*"; *B.M.J.*, II, 1944, page 725.

Robinson, G.: "A rapid method for detecting the Sickle-cell Trait"; *T.R.S.T.M. and H*, Volume XXXIX, No. 3, 1945, page 264.

Hill, K. R. and Robinson, G.: "Fatal D.D.T. poisoning"; *B.M.J.* II, 1945, page 845.

Hill, K. R. and Robinson, G.: "A fatal case of D.D.T. poisoning in a child"; *Nature*, December, 1945.

Leeson, F.: *Key to Gold Coast Snakes having Colubride type Head-shields*; Accra, 1945.

(In the Press) Leeson, F.: *Identification of the Snakes of the Gold Coast Colony* (115 illustrations).

75. The Chemical Laboratory carried out 578 investigations compared with a total of 542 in 1944. The number of samples examined for the Customs Department rose sharply from 191 in 1944 to 415 in 1945. There was, however, a decrease in the number of samples examined for the Police, the number of samples of suspected trade spirit reaching the record low figure of 22. The Laboratory continued to produce 80 per cent spirit for departmental use, and distilled 640 gallons in 1945. In April, 1945, Mr. F. R. Johnson, M.B.E., Government Chemist, was seconded for fisheries development work. The Laboratory continued to undertake all chemical control work in connection with the fisheries development scheme. Marine biological research is being continued, and an article entitled "Variations in the Composition of the Sea in West African Waters" by Dr. G. R. Howat was published in *Nature* during the year.

76. Mr. E. M. Brown, Dental Surgeon, owing to the retirement on pension of Major W. H. Donald, Government Dental Surgeon, had to combine the dental practice of the Gold Coast Hospital with the dental survey of the pupils attending the Government schools in Accra. The results of this survey of the dental condition of the school children is briefly outlined in Part (I), page (6) of this Report. The dental practice at the Gold Hospital involved 2,611 patients and 3,242 treatments. In 1944 (three months) the total patients seen were 821.

77. The X-ray Department at the Gold Coast Hospital carried out 3,288 examinations during the year, and there were 3,157 attendances for electro-therapeutic treatment and massage.

(VIII) TRAINING OF MEDICAL AND HEALTH PERSONNEL

78. The training of African personnel has been outlined in paragraphs 18 and 19 of Part (I) of this Report. A brief summary only will, therefore, be given here. Three Gold Coast Certificates of Nursing were awarded during the year. This Certificate is at present the highest nursing qualification obtainable in the Gold Coast.

79. Eight candidates were successful in the examinations held for the Pharmaceutical Certificate of the Gold Coast.

80. The total number of pupil midwives in training at the Maternity Hospital, Accra, during the year was 84. Of these 18 obtained the Certificate of the Midwives' Board.

81. No Health Visitors' Certificate was issued during the year.

82. The School for the training of Sanitary Inspectors in Accra continued throughout the year. A Training Officer has now been appointed ; and the new buildings to house the School are in process of erection. Five candidates were successful in obtaining the Certificate (West Africa) of the Royal Sanitary Institute.

83. The new Nurses' Training School and Hostel opened in Kumasi early in the year in temporary premises, with 17 pupil nurses. Funds were provided for 1946-47 for the erection of a new Nurses' School and Hostel in Accra. This new school is designed to accommodate 120 pupil nurses. The reason for the removal of the site of the school to Accra is that advantage can be taken at once of the facilities offered by the Gold Coast Hospital for teaching purposes. Whereas in Kumasi, a few years must elapse before the building of the proposed new central hospital. The old, existing African Hospital in Kumasi does not offer adequate facilities for teaching. The African Nursing Staff situation is such that African Nurses continue to be trained under the previous "apprentice" system at the larger hospitals, and in particular at the Gold Coast Hospital.

III—FINANCE

Branch					Actual Expenditure January to July, 1945		
					£	s.	d.
A. Medical and General	...	...	...	...	153,322	19	2
B. Health Branch	...	...	...	...	129,666	10	5
C. Laboratory	...	...	...	...	3,849	19	11
D. Nurses' Training School and Hostel	...	...	...	...	2,703	6	3
Total	...	...	...	...	289,542	15	9
Total Gold Coast	...	...	...	...	3,163,974	1	3
Percentage of total to total for the Gold Coast for the period January to July, 1945					9.2		

84. The expenditure shown on the medical services does not include the cost of buildings, water supplies, town improvements and other public works of health importance.

J. G. S. TURNER
Acting Director of Medical Services.

RETURN A

Return of Diseases and Deaths (In-patients) and Diseases (Out-patients) for the Year 1945

Diseases	IN-PATIENTS							OUT-PATIENTS	
	Remaining in hospital on 31st Dec., 1944	Yearly Total				Total cases treated	Remaining in hospital on 31st Dec., 1945	Males	Females
		Admissions		Deaths					
		Males	Females	Males	Females				
1. (a) Typhoid fever	9	80	51	14	16	140	8	32	23
(b) Paratyphoid fever	—	5	2	—	—	7	1	1	2
(c) Type not defined	—	6	—	1	—	6	1	45	27
2. Typhus fever	—	6	1	1	—	7	—	—	2
3. Relapsing fever	—	—	—	—	—	—	—	—	—
4. Undulant fever	—	—	—	—	—	—	—	—	—
5. Smallpox	—	4	3	—	—	7	—	—	—
6. Measles	—	23	13	1	—	36	1	419	331
7. Scarlet fever	—	—	—	—	—	—	—	—	—
8. Whooping cough	—	9	6	4	2	15	—	666	609
9. Diphtheria	—	3	—	—	—	3	—	15	44
10. Influenza—									
(a) with respiratory complications	2	42	5	—	—	49	1	100	49
(b) without respiratory complica- tions	—	18	9	2	1	27	—	163	106
11. Cholera	—	—	—	—	—	—	—	—	—
12. Dysentery—									
(a) Amoebic	9	174	78	15	6	261	2	209	110
(b) Bacillary	3	105	29	11	4	137	4	142	64
(c) Unclassified	2	32	5	5	2	39	—	631	527
13. Plague—									
(a) Bubonic	—	—	—	—	—	—	—	—	—
(b) Pneumonic	—	—	—	—	—	—	—	—	—
(c) Septicæmic	—	—	—	—	—	—	—	—	—
14. Acute poliomyelitis	—	3	3	—	1	6	—	1	5
15. Encephalitis lethargica	—	4	2	3	2	6	—	—	—
16. Cerebro-spinal fever	5	594	370	101	77	969	1	196	101
17. Rabies	—	6	5	4	1	11	—	17	2
18. Tetanus	4	93	45	34	17	142	9	79	34
19. Tuberculosis of the respiratory system	56	525	85	253	31	666	30	1,078	308
20. Other tuberculous diseases	33	103	33	13	4	169	12	198	114
21. Leprosy	562	196	96	30	8	854	607	291	219
22. Venereal diseases—									
(a) Syphilis	12	150	9	8	1	171	17	458	222
(b) Gonorrhœa, complications and sequelæ	42	1,251	230	30	2	1,523	39	6,451	1,494
(c) Other V. D.	9	315	47	6	—	371	5	675	156
23. Yellow fever	—	3	2	3	1	5	—	—	—
24. Malaria—									
(a) Benign tertian	—	21	7	1	1	28	—	1,046	901
(b) Subtertian	12	998	329	28	15	1,339	34	7,057	3,776
(c) Quartan	—	7	—	—	—	7	—	105	28
(d) Unclassified	26	1,139	453	18	17	1,618	32	19,857	13,136
25. Blackwater fever	1	14	8	5	1	23	—	10	4
26. Kala-azar	—	—	—	—	—	—	—	—	—
27. Trypanosomiasis	193	649	287	61	19	1,129	131	1,872	919
28. Yaws	24	120	65	2	2	209	9	84,089	70,770
29. Other protozoal diseases	5	25	14	—	—	44	—	423	368
30. Ankylostomiasis	9	300	84	29	9	393	8	1,062	537
31. Schistosomiasis	3	100	20	2	—	123	3	1,246	276
32. Other helminthic diseases	9	274	95	8	4	378	13	3,182	1,973
33. Other infectious and/or parasitic diseases	28	344	72	11	3	444	10	1,364	693
34. Cancer and other tumours—									
(a) Malignant	2	36	32	11	6	70	3	42	52
(b) Non-malignant	5	80	91	4	8	176	6	473	244
(c) Undetermined	2	24	46	3	5	72	3	108	141
35. Rheumatic conditions—									
(a) Rheumatic Fever	—	—	—	—	—	—	—	—	—
(b) Other rheumatic conditions	—	240	58	2	—	298	4	9,604	5,590
36. Diabetes	—	25	4	2	1	29	—	47	21
37. Scurvy	—	1	—	—	—	1	—	8	5
38. Beriberi	—	10	3	2	1	13	1	18	7
39. Pellagra	1	14	4	5	1	19	—	61	23
40. Other disease—									
(a) Nutritional	18	153	85	22	13	256	7	1,064	744
(b) Endocrine glands and general	—	103	171	5	1	274	9	442	508
41. Diseases of the blood and blood- forming organs	25	231	172	62	37	428	32	1,429	1,273
42. Acute and chronic poisoning	1	42	17	8	1	60	1	25	19
43. Cerebral hæmorrhage	—	59	22	36	5	81	—	72	25
44. Other diseases of the nervous system	507	290	97	63	19	894	26	1,564	852
45. Trachoma	1	20	16	—	—	37	—	104	83
46. Other diseases of the eye and annexa	14	468	363	2	—	845	22	12,645	9,417
47. Diseases of the ear and mastoid sinus	5	130	40	2	—	175	5	3,978	2,401

RETURN A

Return of Diseases and Deaths (In-patients) and Diseases (Out-patients) for the Year 1945—*contd.*

Diseases	IN-PATIENTS							OUT-PATIENTS	
	Remaining in hospital on 31st Dec. 1944	Yearly Total				Total cases treated	Remaining in hospital on 31st Dec. 1945	Males	Females
		Admissions		Deaths					
		Males	Females	Males	Females				
48. Diseases of the circulatory system—									
(a) Heart diseases	10	202	70	84	17	282	6	626	346
(b) Other circulatory diseases ...	4	122	67	12	10	193	4	487	226
49. Bronchitis	9	303	100	12	3	412	12	14,433	6,956
50. Pneumonia—									
(a) Broncho-pneumonia	10	235	131	60	39	376	7	438	244
(b) Lobar-pneumonia	20	558	200	65	16	778	18	375	194
(c) Otherwise defined	6	179	76	29	7	261	14	767	328
51. Other diseases of the respiratory system	16	332	108	16	5	456	14	2,708	1,404
52. Diarrhœa and enteritis—									
(a) Under 2 years of age	—	37	41	8	10	78	1	1,911	1,818
(b) Over 2 years of age	11	401	101	19	9	513	8	3,538	2,001
53. Appendicitis	4	66	21	1	—	91	1	69	26
54. Hernia, intestinal obstruction ...	39	836	56	62	13	931	29	992	96
55. Cirrhosis of the liver	2	75	17	30	3	94	1	77	25
56. Other diseases of the liver and biliary passages	6	186	49	23	5	241	8	349	208
57. Other diseases of the digestive system	43	710	343	39	20	1,096	25	18,838	8,782
58. Nephritis (all forms)—									
(a) Acute	5	49	29	6	4	83	4	185	189
(b) Chronic	15	140	56	44	15	211	9	242	142
59. Other non-venereal diseases of the genito-urinary system	46	652	633	32	11	1,331	64	2,425	5,485
60. Pregnancy, child-birth, and the puerperal state (including normal labour and maternal welfare) ...	61	—	2,989	—	150	3,050	81	—	35,666
(a) Abortion	9	—	722	—	10	731	14	—	610
(b) Ectopic gestation	—	—	75	—	12	75	2	—	43
(c) Toxæmias of pregnancy ...	3	—	55	—	9	58	2	—	23
(f) Other conditions of the puer- peral state	19	—	345	—	40	364	7	—	787
61. Diseases of the skin, cellular tissue, bones and organs of locomotion ...	301	4,186	1,426	104	37	5,913	267	47,532	25,020
62. Congenital malformations and dis- eases of early infancy (including infant welfare)	6	109	146	17	11	261	5	712	364
(a) Congenital debility (children under 1 year)	—	30	36	7	2	66	4	45	61
(b) Premature birth (children under 1 year)	2	19	38	10	5	59	4	75	259
(c) Injury at birth (children under 1 year)	—	7	10	5	2	17	1	18	42
63. Senility	11	13	6	5	3	30	1	64	64
64. External causes—									
(a) Suicide	—	1	—	1	—	1	—	—	1
(b) Other forms of violence ...	224	2,212	603	116	29	3,039	162	10,272	1,743
65. Ill-defined	29	564	333	13	2	926	47	5,688	3,744
Total	2,550	21,891	12,666	1,753	844	37,107	1,919	277,730	216,232

